DOCUMENT RESUME

ED 355 710 EC 301 958

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TITLE Communicating with Signed Language: Hearing Mothers and Deaf Infants.
PUB DATE Nov 92
NOTE 13p.; Paper presented at the Annual Convention of the American Speech-Language-Hearing Association (San Antonio, TX, November 20-23, 1992).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Communication Skills; *Deafness; Early Experience; Early Intervention; Expressive Language; Infants; Interpersonal Communication; Intervention; *Language Acquisition; Mothers; *Parent Child Relationship; *Parent Influence; Performance Factors; Preschool Education; *Sign Language; Total Communication

ABSTRACT

This study examined the expressive communication and language of seven hearing mothers and their deaf infants. Total communication intervention programming was begun before 9 months of age, and communication behaviors were observed during free play when infants were 12 and 18 months old. Other data were obtained in structured interviews with mothers. Results indicated that frequency of maternal signing was correlated at 12-month and 18-month sessions; patterns of frequent or infrequent signing production were evident within several months of entry into programming. Mothers who signed most often reported that other adults (fathers, other relatives, friends) were also learning and using signs. Infants' 18-month sign production was correlated with mothers' production at 12 and 18 months. Infants whose mothers signed approximately 40 percent of 12-month utterances began expressive signing at 13 months. The study concluded that even somewhat limited maternal sign production allowed infants to acquire first expressive signs at a normal age, and that infants whose caregivers are not signing after several months of intervention programming are at very high risk for difficult and delayed language acquisition. (Author/JDD)

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COMMUNICATING WITH SIGNED LANGUAGE: HEARING MOTHERS AND DEAF INFANTS

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EC 301458

Poster Presented at Conference of American Speech, Language, and Hearing Association. San Antonio, Texas. November, 1992

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Abstract

Expressive communication and language of seven hearing mothers and their deaf infants is described. Infants' severe-profound or profound sensorineural hearing loss was identified by six months and total communication intervention programming was begun before 9 months of age. Communication behaviors were observed during free play when infants were 12 and 18 months old. Other data were obtained in structured interviews with mothers. Frequency of maternal signing was correlated at 12 and 18 month sessions: patterns of frequent or infrequent signing production were evident within several months of entry into programming. Mothers who signed most often reported that other adults (father, other relatives, friends) were also learning and using signs. Infants' 18-month sign production was correlated with mothers' production at 12 and 18 months. Infants whose mothers signed approximately 40% of 12-month utterances began expressive signing at 13 months.

Introduction

Despite availability of Total Communication programs for deaf children, most whose parents are hearing continue to show significant language delay (e.g., Hadadian & Rose, 1991; Rodda & Grove, 1987). Because quantity of language to which hearing infants are exposed has been associated with rate of language acquisition (Huttenlocker, Haight, Bryh, Siltzer & Lyons, 1991; Tomasello, Mannle, & Kruger, 1986), hearing parents' lack of fluent signing may negatively affect their deaf children's language acquisition. However, few data are available on the rate at which hearing parents learn and use signed language with deaf infants or upon the relationship between quantity of parental sign use and infant language acquisition.

This poster presents data on 7 dyads provided early diagnosis and intervention. Dyads included those from a larger study which met the following requirements: (1) infants with unaided, severe-profound hearing loss and no other disabilities; (2) hearing loss identified and services provided by total communication program before infant was 9 months old; (3) family remained in program through infant age 18 months.

Questions Investigated:

1. Given access to early intervention, how frequently do mothers produce signed language while interacting with deaf infants?

   A. What factors are associated with frequency of mothers' signing?

   B. Do mothers' reports of their habitual frequency of signing match observed frequency of signing?

2. Given access to early intervention, how frequently do infants produce expressive communication while interacting with hearing mothers?

   A. Is infants' frequency of prelinguistic communication related to mothers' production of signed and/or spoken language?

   B. Is infants' frequency of expressive language (signed or spoken) related to frequency of mothers' expressive language (signed or spoken)?

   C. Are mothers' reports of infant sign lexicon related to observed frequency of infant signing?

Methods:

Observations of Communication/Language:

Dyads were videotaped during a play session in a laboratory setting. A standard set of toys was provided. After a 3-5 minute "warm-up" period in which infants played alone, mother-infant play sessions lasted 15 minutes at 12 months and 20 minutes at 18 months. Mothers were asked to "Play with (your baby) just like you would when there is free time available at home--as naturally as possible."

Ten minutes of each play session were transcribed and coded for mother and infant communication and language, including infant prelinguistic vocal and gestural communicative acts, infant vocal and signed linguistic acts, mothers' vocal and signed linguistic acts. (Coding system can be found in Spencer, in press, and Meadow-Orlans, MacTurk, Spencer, & Koester, 1991.)

A "signed utterance" included at least one "content" sign which would transmit a meaningful message if received. (Noting that an utterance was signed does not indicate that all of the spoken elements were represented in the signed accompaniment.)

Structured Interviews:

Mothers were interviewed when infants were 9 months, 12 or 15 months, and 18 months old. Subscales from the Developmental Profile II were administered to confirm that infants were developing normally with the possible exception of communication. At the latter two times, mothers were asked for estimates (and specific examples) of infant expressive and receptive lexicons in sign and speech based upon records they were keeping at home.

Results:

1. Mothers' communication acts

   A. There was considerable individual variation in mothers' signed utterance production. Mothers who signed most frequently reported other adults (fathers, babysitters) at home who were learning and using signs. No other factors assessed were associated with mothers' tendency to use signs expressively.

   B. Mothers' rate of sign production at 12 months and at 18 months were correlated significantly (r_s=.88, $p<.05$). With one exception, all mothers increased rate of signing between 12- and 18-month sessions.

   C. Mothers' observed sign production was not significantly related to their reports of habitual sign productions. The mothers who signed rarely reported higher rates of signing than was observed.

   D. Even the highest rate of maternal signed utterance production was far below rates of maternal spoken utterances observed in hearing dyads.

2. Infant Communicative Acts

   A. Although relationships between infants' prelinguistic communicative acts and mothers' production of signed or spoken utterances failed to reach statistical significance, the two infants whose mothers rarely signed were infrequent communicators. The infant whose mother never signed decreased prelinguistic communicative acts between 12 and 18 months.

   B. Infants' observed sign production at 18 months was significantly correlated with that observed for mothers at 12 and 18 months (r_s=.87, $p<.05$). Infants whose mothers accompanied approximately 40% of 12-month spoken utterances with signs began signing at 13 months of age.

   C. Infants' observed linguistic production and mothers' reports of infant lexicon failed to correlate significantly.

Conclusions/Recommendations:

1. Even somewhat limited maternal sign production allowed infants to acquire first expressive signs at a normal age. However, infrequent maternal signing was associated with reduced infant prelinguistic and linguistic communication.

2. Infants whose mothers are not signing after several months of intervention programming -- and who have no adults other than mother in the home environment who are learning signs -- are at very high risk for difficult and delayed language acquisition. These families are in need of intensified and/or modified intervention efforts.

3. Relationships suggested in this report should be investigated with a larger sample.

Examples of Mothers' Spoken and Signed Utterance

SPEECH	SIGN
"So cute and silly"	CUTE AND SILLY
"No"	TAKE-IT-OUT-MOUTH+++
"How about a block?	BOX (point)
"Want me to help you?	HELP-(question expression)
"That's for the doll"	FOR DOLL
"Daddy's on the phone"	DADDY ON PHONE
"Big spoon"	BIG SPOON
"That's soft"	SOFT
"Soft dog"	SOFT DOG
"The cat's sleeping"	CAT SLEEP
"It's mommy's telephone"	MOMMY TELEPHONE
"It's not a hat"	NOT HAT++
"It's her hair"	HAIR

Mothers' Signed and Spoken Language with 12- and 18- month-old deaf infants

	12 Months 10 Minute Observation				18 Months 10 Minute Observation				18 Months Mother's Report		
Family	Signed Uttances	Spoken Utterances	% With Sign	Different Signs Used	Signed Uttances	Spoken Utterances	% With Sign	Different Signs Used	% Mom Usually Signs	% Dad Usually Signs	Other Signers
1	0	76	0%	0	0	52	0	0	50%	0%	0
2	0	175	0%	0	9	171	5	2	<25%	0%	0
3	5	135	4%	4	13	118	11	12	50%	<50%	0
4	8	65	12%	5	22	74	30	19	100%	100%	Relatives, Sibling
5	51	136	38%	21	56	69	81	39	>75%	N/A	Babysitter, Friends
6	35	62	56%	19	45	62	72	38	>75%	>75%	Relatives, Friends, Sibling
7	25	56	45%	17	57	70	81	49	>75%	>50%	Relatives, Friends

12- and 18- month Communication and Language Production of Deaf Infants with Hearing Parents during ten minutes of play with toys

	12 Months		18 Months			18 Months
	10 Minute Observation		10 Minute Observation			Mother's Report
Family	Gestural Communication	Vocal Communication	Gestural Communication	Vocal Communication	Signed Utterances	Sign Lexicon (#)
1	17	14	7	8	0	1
2	2	0	4	1	0	4
3	5	85	12	39	0	50
4	15	8	26	27	1	10
5	0	0	11	12	5	45
6	20	20	17	21	13	20
7	17	17	25	4	8	40

Characteristics of Families and Infants

	Family[a]		Infant			
Case No.	Mothers' Education (Yrs.)	Residence	Gender	Birth Order	Hearing Level	Etiology
1	16	Suburb	M	1st	S-P	CMV
2	13	Suburb	F	4th[b]	S-P	Rh factor
3	20	Suburb	F	2nd	S-P	CMV
4	12	Rural	F	2nd[b]	S-P	Genetic(?)
5	14	Suburb	M	1st	Profound	Meningitis
6	15	Urban	F	2nd[b]	S-P	Genetic(?)
7	16	Rural	F	2nd	Profound	CMV

[a]All parents are hearing and Caucasian

[b]Older sibling with hearing loss

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